

**SKILL AND KNOWLEDGE MANAGEMENT PRACTICES  
TO ENHANCE COMPANY PERFORMANCE:  
THAI CONSTRUCTION INDUSTRY**



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entitled  
**SKILL AND KNOWLEDGE MANAGEMENT PRACTICE TO  
ENHANCED COMPANY PERFORMANCE: THAI  
CONSTRUCTION INDUSTRY**

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Panya Thongpuang

## **COMMONALITIES IN MANAGEMENT PRACTICES THAT ENHANCE THE CONSTRUCTION COMPANY PERFORMANCE IN THAILAND**

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M.M. (ENTREPRENEURSHIP MANAGEMENT)

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### **ABSTRACT**

This paper presents how construction agents explore commonalities to develop a high performance for customers. The paper's purpose is to share the hereby gathered knowledge about construction management practices in the construction industry with those who are interested in this kind of topic.

In order to find such management practices, a qualitative research method was used to collect data from the interviewees. Twenty interviewees were interrogated, which work in a leading construction agency. In this way, the management practices of different construction services can be compared in order to prove that the research results can be applied in all levels of different construction companies.

The findings of this study demonstrate that within the construction industry there is no specific pattern, which ensures high performance for customers. Different types of customers require different types of practices. The research result shows that management practices are usually applied by agents in order to develop a good company performance in each stage, from the pre-relationship stage to the stable stage.

**KEY WORDS:** Construction industry / Contractor / Engineering / Contractual

35 pages

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## **CHAPTER I**

### **INTRODUCTION**

The Global Construction Perspectives and Oxford University's business college, which forecast and analyze the economics of international institutions, predict a 3.9 % annual growth in global construction businesses until 2030 (Nech, 2015) .The main drivers for this growth are the governance of emerging countries and the economic instability. China makes the largest share of the market, but it will only increase its margin slowly until 2030. Compared to the construction business in the US, the growth will take place up to 15% quicker than in China during the next 15 years. Reports show that India may become the 3rd largest construction market by 2021. (Nech, 2015)

The construction industry forecast-period growth for Thailand will be driven by its private sector and its public investments, which mainly are focusing on energy, commercial, infrastructure and residential construction projects. In the period from 2016 to 2022, the government aims to develop the transportation throughout the country further, which also contributes to the construction sector. (Nech, 2015)

The construction industry makes 8% of Thailand's GDP (Atradius ,2018). Mostly, the activities stem from the public sector, which account for more than 60% in total. Around 80 thousand construction companies are registered in Thailand, of which 1%, the large-scale operators, generate more than 70% of the market share. Mainly, the government has driven large infrastructure projects, which are expected to have a high rate of growth over the next 5 years. This case shows that the construction business still has the potential to grow bigger and that all companies are concerned about their performance. The reason why they are so concerned about their performance is that it may or may not lead to further customer orders.

A business does not only need a strategy, but also passion to drive the company's growth and a high performance in order to be trustworthy. The latter is exceedingly important in terms of construction businesses as their customers are living in the resulting building after the construction process is finished. Therefore, safety

should be guaranteed by the construction companies. Because of this, overly skilled employees are required for running a construction business. However, the question is, how people are supposed to trust this much? Even if the scale of a company is large, there might have been some accidents caused by this company. Therefore, this research tries to find the key factors for a construction company's performance and success.

## **1.1 Problem Statement**

“Credit Crunch” is the incontrovertible cause, destroy Thailand's values of property and ASEAN countries in the past. In ASEAN countries, many economies that had grown outrageously were experienced a dramatic fall in their economies. Especially, the developers in property industry was facing tougher situation than other industry. On the contrary, the property sector in Thailand grows slower as well but still in better position especially in off-plan developments, offer a chance for relatively stable and longer-term investments. (Phillip,2018)

A major impact on construction firms were caused by a very high number of competitors in the high season period from 2003 until 2016. At this time, the construction firms developed themselves as a combination with design firms, engineering firms or developer firms. This was right before the Credit Crunch damaged the Thai values of property. Since 2016, construction firms are put under high pressure as the end of the construction process now belongs to the responsibilities of the firm. Some of the construction companies died because of cost reductions and rack of financial knowledge. Additionally, the developers, which have been working in such a combination firm, learnt the contractors' skills and are now able to build properties without constructors. (Miller, 2017)

This study focuses on what skill and knowledge that enhance company performance. It provides 5 chapters. firstly, it starts with the background, the problem and purpose of this research. Secondly, a literature review follow, which builds the information basis for support research. Thirdly, the methodology of the research, the explanation of the data collection and the target group. Fourthly, the finding of research is outlined. And lastly, the completed study with the recommendation and conclusion.

## **1.2 Research Objectives**

- Explore skill and knowledge which support the performance of construction companies in Thailand
- Prioritize the discovered drivers to show their importance of single driver in terms of influencing the performance of construction companies.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Construction background**

The process of constructing a building or infrastructure is called “construction”. This industry differs from other industries as it typically involves similar items or mass products, so a designated buyer is not necessary. A construction usually takes place in a location for admitted customers. Planning, designing, and financing are the starting processes of every construction. This goes along until the buildings are ready to be used. (Wikipedia, retrieved 2018)

Construction requires work and coordination across multiple moderations. The whole project is regularly managed by a PM (project manager) and a CM (construction manager). A construction engineer, a design engineer, a designer, or an architect supervises it. Those, who are implicated in the design and administration should consider the requirements of the environmental impact, budgeting, scheduling, zoning, safety, construction-site and transportation of property materials. Construction businesses are also prone to suffer from delays, which are mostly caused by public transportation or mega scale projects. (Merriam-Webster, retrieved 2016). Specifically, there are three sectors of construction: infrastructure, industrial and buildings.

Particularly, characteristics of the construction result from the competition policy and the construction itself. The construction sector is a critical sector in economies because it contributes a lot to the infrastructure and the structure in and of every other industry. Within the construction industry in Thailand there is very high competition and only large-scale companies can often survive as they have also large-scale projects, which are supported by foreign countries. Furthermore, the performance and the progress of each project is presented to the public in terms of the quality of the buildings. (Merriam-Webster, retrieved 2016)

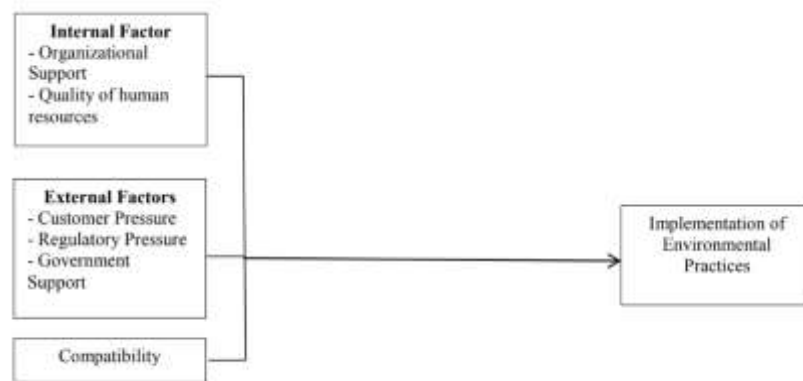
## **2.2 Skill needed in construction industry**

Skill is one of the factors in this study, it means the ability to carry out a task with determined results. Skills can be divided to two categories: domain-general and domain-specific skills. For example, domain of work included some general skills such as time management, teamwork and leadership, self-motivation and others. In order to domain-specific skills would be used only for a certain job. In this study selected only the relevant skills which support construction industry. (Source : wikipedia retrieved 2018)

### **2.2.1 Environment and Safety Practices**

It is crucial to reduce the negatives effects resulting from the construction industry. The demand of investments has dramatically increased. The construction market has been hit hard by the Credit Crunch. However, the international construction firms were hired in Thailand. The advantage of international companies is the environmental mindset. The higher the education of people and the better the opportunities to use innovative machinery, the more important are also the concerns about the environmental surrounding. Therefore, pressure from the investors pushes local firms to meet international standards.

The EP skill (Environmental practices) refers to the research Environmental Practices in Construction firm by (Yusof, Abidin, & Iranmanesh, 2016). It is classified into three main physical factors: Waste management, energy efficiency and environment effect. The harm caused by construction activities is initiated by project teams of construction companies. The concept for policy makers and construction firm managers to implement EP in the construction sector is provided as framework in Figure 2.1



**Figure 2.1 Conceptual of Environmental Practices in Construction firm**

The internal and external factors are classified separately. The organizational support is a major factor in the selecting method of being a green construction. The firms are expected to employ executives which focus on environmental protection and a good human resource management. The failure to meet the customer's needs is named "Customer Pressure" which is the main part of the external factors. The regulatory pressure and the government support are linked factors. A challenge for the firm's development is to identify new technologies, which lower environmental costs and have a beneficial effect in terms of distribution. However, the government may support the firms with resources. The third part, the compatibility, reflects if the EP is suitable for the firm operations or not.

Also safety practices pertain to the top priorities of the construction firms. The research of Strategies for improving safety performance in construction company from Pontificia Universidad Católica de Chile refers to the number of accidents which does not only affect construction workers but has also impact on the lives of the whole family. The safety aspects need to be set in the organization where collective behaviors of people become a pattern. The firm's safety practice, which can be used as safety manual focuses mostly on managers, certifications, and safety incentives. The accident rate considers seven categories as depicted in Figure 2. The image shows the comparison of the practice implemented in the company (blue) and the practice which is not implement in the company (red).



**Figure 2.2 Accident rate**

### 2.2.2 Sustainable Development Practices.

Construction industries have significant impacts on the economy, the society and the environment. To transform construction industries towards sustainability, construction enterprises' perceptions and performance on sustainability needs to be understood and evaluated (Chang, Zuo, Zhao, Soebarto, Lu, Zillante, & Gan, 2017). The findings show that quality management and customer service are perceived as the most important as well as the best-performed aspects by the firms while supporting community development is the least important and worst-performed aspect. Sustainability attitude is positively correlated with performance, and larger firms tend to have a better sustainability performance than smaller ones.

The firm size is related to the level of sustainability's attitude. For example in China, they provide national programs for sustainability issues. One of the programs from the government was introduced as the top 1000 energy-consuming enterprises. A target has been set for improving sustainability awareness and firm's performance (Zeng, Zhang ,2015). The impacts of environmental organizations or the attention of social media on large enterprises are stronger than on medium and smaller size enterprises. The implementation was not satisfactory due to valuable obstacles such as the disagreement between the cost and environmental performance or the client's support surplus.

### **2.2.3 Attitude of Leaders**

Attitudes of leaders who operate these firms do impact positively or negatively the growth of their businesses. The majority of construction SME leaders have an attitude of being profit-oriented and do not concentrate on the growth of their firms. Also, negatively characterized leader attitudes such as anger, hatred, cynicism, inferiority, distrust, antagonism and resentment expressed towards personnel hinder the growth of a firm. Further, low levels of educational qualifications of owners have established attitudes that compel them to exhibit non-standardized managerial practices which result in poor human relations among employees and thereby affect the firm's growth. In conclusion, attitudes of construction firm leaders are composed of three components; namely, a cognitive component, an affective/emotional component, and a behavioral component. (Arthur, 2016)

The owner attitudes are exhibited towards the employees' performance. This usually reduces the moral level and has a large impact on the entire employee's performance. Moreover, the sense of possession can be reduced or intensified by the individual personality of employees. In addition, the firm's culture gives a reflection of the manager's or the owner's needs, wishes and personality. Finally, the satisfaction of firm owner meets the level of the current status-quo of the firm.

### **2.2.4 Quality of Services**

Customers perceive that both, brand preference and quality of service, but especially quality of service, significantly influence customers future ordering intentions. With a good service, a company can increase its sales and improve the customer's satisfaction. Therefore, the research shows three main factors that influence customers' satisfaction: Location, quality of product and technology innovation. (Prakash, Phadtare, 2017)

## **2.3 Knowledge needed in construction industry**

Knowledge is a familiarity, awareness, or understanding of something or someone, which is acquired through experience or education by perceiving, discovering or learning. It can refer to a practical or theoretical understanding of a subject. It can be



expertise. In this study selected the relevant knowledge used in construction industrial. (Source : oxford dicnaries, retrieved 2018)

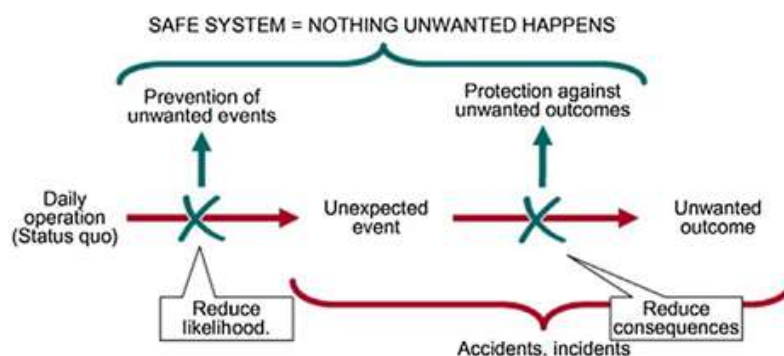
### **2.3.1 Facility management**

Facility management deals with the administration and the management of buildings, the buildings' facilities and amenities. As the business environments are changing rapidly nowadays, it is very important for the built environment to keep up with these fast changes. Therefore, facility management is needed. Furthermore, the quality of buildings and their effectiveness in terms of performance have to be checked in order to intervene, if necessary, and improve the overall efficiency.

The firm performance measurement is one of the most noticeable features of the modern behavior. Including economics, business, education, politics and sport. The facilities in the building provide a value for money working environment. (Amaratunga, Baldry, & Sarshar, 2000)

### **2.3.2 Risk management**

Risk management problems in many companies nowadays are increasing. A lot of managers underestimate risks in the working environment, especially during a construction project's implementation phase and therefore do not implement necessary safety standards. Aside from the underestimation of risk, many managers just want to save money or time and incorporate only basic safety standards. However, accidents may even cause higher costs than applying appropriate safety standards. (Argiles-Bosch, 2014) found a negative relationship between accidents in one year and a firm's financial performance one year ahead. This shows that accidents can reduce the company's performance due to their high costs.



**Figure 2.3 Safety Model: Prevention and protection**

### 2.3.3 Cost and time management

Some important factors that cause cost overruns and misleading time are: contractor's inexperience, inadequate planning, inflation, incessant variation order, and change in project design. They are critical for causing cost overruns and time mislead, while project complexity, shortening of project period and fraudulent practices are found to be responsible. (Lekan, Amusan,2017)

The main reasons for cost overruns are project complexity, reduction of the time of a project and deceitful practices. Below data recorded is compared with data from scientific literature.

**Table 2.1 Effects of times and cost on project performance**

Data of impacts of time and cost on project performance.

Effects	R.A.I	Rank
Time overrun	0.796	1
Tied-up Capital	0.772	2
Loss of investment	0.756	3
Materials are effectively put to use	0.728	4
High tendency for the occurrence of dispute between the clients and contractors.	0.724	5
Project abandonment.	0.704	6
Excessive increase on the entire project cost.	0.656	7
Client's dis-satisfaction	0.640	8
Profit loss.	0.632	9
Consultant dissatisfaction	0.632	9
Payment delay	0.628	11
Good completion time	0.616	12
Maximized project profit	0.600	13
Reduced building component quality.	0.576	14
High level of material wastage	0.528	15

R.A.I= Relative Agreement Index

### 2.3.4 Managing design changes

Implications of design changes are the project's delivery performance, enablers of effective communication, enablers of project learning and types of reusable

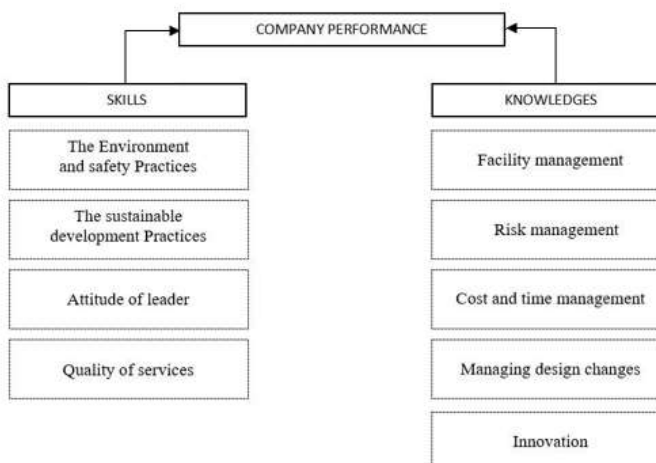
project knowledge. This model highlights the importance of effective communication and project learning towards improving the level of competency and cohesiveness of a project team in managing future projects. CAs design changes can have many reasons and therefore occur very often during a construction project and it is very important that a company knows how to deal with it correctly and efficiently. The need for design changes can be caused by clients, consultants, contractors, sites and external-related themes. Proficiency in managing design changes can only be reached by following a learning process. Therefore, project experiences need to be harnessed in terms of shortening the learning curve and make the most of past experiences. (Hui Yap, Abdul-Rahman, & Wang Chen, 2017)

### **2.3.5 Innovation**

As every construction site and project differs and even changes over time, there are no real standard approaches to operate in this type of industry. This makes the invention and application of innovations indisputable necessary. The problem is that need for innovation is very cost- and time-intense. Therefore, innovations should be somehow implemented into a company's standard management process. To do so, innovations have to be standardized. To reach this goal, every department of an organization has to supervise and improve different factors of an innovation and incorporate them into the business's processes. (Na MI, Catherine, Alexander & Hans, 2018)

## **2.4 Research framework**

The performance of a company can be divided into 2 categories: Skills and knowledges: They are separated as it requires a totally different method to create them. In order to increase a skill one needs time and experience. In contrast, knowledges can be gained from study or training programs. So, for the company performances a combination of both factors is needed. Otherwise, the performance is available of tracking where is the items which need to improve.



**Figure 2.4 Framework of Company performance**

These elements build the evaluation table with which the performance of the company can be measured. The elements of skills are: environment and safety practices, sustainable development practices, attitude of leader and quality of services. Knowledge consist of: facilities management, risk management, cost and time management, managing design changes and innovation.

The table provides scores from 1-10 which represent a range from low importance to high importance for each factor. The weighting factor has to be provided by trustworthy or experienced experts from the industry. The reason for adding a weighting factor to the table is that results should be calculated as realistic as possible. It depends on the scale of each company and also on the individual purpose. For example, company A hires 1-50 employees and works mostly in the field of construction processes whereas company B hires more than 300 employees and works in the field of providing engineering and consulting services. Each of the companies should enter a different weighting factor into the column, suitable for their individual purpose.

Lastly, the percentage is calculated after the final research. The percentage column summarizes everything after all of the interviewees have completed the form. Therefore, the results should be able to show the highest and therefore the most important factor of each topic. Additionally, it should show the weakest factors of the company which should be improved afterwards, if necessary. See table 2 below.



## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.1 Research methodology**

In order to clearly understand the construction situation in Thailand, qualitative research method is an inductive methodology of gathering data and a great way to follow up is preferable over utilizing and included dig deeper in the research question (McMillan, Schumacher, 1993). Therefore, several persons of the construction business were interviewed. More specifically, the interviewees should have been working at their workplaces for more than 2 years as their experiences with changes and problems have to be suitable for this research.

#### **3.2 Target sampling**

The research is designed to focus on experienced people, which manage the firms or coordinate these problems as they are able to provide the best information. High position employees or senior level employees of construction firms, property development firms and architectural design firms from small to medium size are most suitable. Each group has knowledge about the industry and the ideality perspective and objectives.

#### **3.3 Data collection**

This research utilized face-to-face interviews and recorded sound. The interviews were conducted within 20-30 minutes per person. Before setting up the interview session, the researcher provided the prepared questionnaire. Also, open questions were incorporated as they allow for interviewees to speak freely and openly

about the construction industry in Thailand. Furthermore, it gave the interviewer the chance to come up with related questions in order to get as much information as possible. This method is the safest way to receive honest information about the interviewees' experiences and knowledges.

1. Provide the evaluation form which combined all supported drivers from literature review to the interviewees.
2. The study find expert in construction industry who have experiences more than 5 year and worked in variety department provided weight of each drivers.
3. Interviewee score their company performance in the evaluation form.
4. The interview used evaluation form as the base of questionnaire. Because it can show the less score compare to the higher score. Or which factor show the most important in their company.
5. Start interview interviewee with the open-questions within 20-30 minute each.
6. The interview asked permission for recording sound and noted all the key conversation.

## **CHAPTER IV**

### **DATA ANALYSIS & FINDING**

The research was conducted to analyze the internal and external drivers which may contribute to the performance of construction firms to different degrees. As there are several drivers within the construction industry, the author filtered the 20 interviewees according to their field of work: Property management, property development, construction, architectural, and engineering. All interviewees of one category work in different departments, so the information can be applied to all construction firms. As mentioned above the interviewees had to have 2 or more years of working experience in the respective department and company. To do so, the responsible from the interviewee would be enough to accolated.

This study has investigated, which drivers of construction management can enhance a company's performance. Two main factors were classified as skills and knowledge, which have the main impact on the company's performance. The study identified that construction skills are required from the first start of the company. Moreover, the knowledge supports and contributes to an increase in the professional performance of the company.

In the evaluation form divided to two factors (skills and knowledge), sub-factor called driver which supported main factor. And the factor under driver called details. Refer to table 3 in the following page shows that from the 4 main drivers of factor skill is "quality of service" has the highest score which means that this is the focus factor compared to the other 3 drivers (sustainable development practice, environment and safety practice and attitude of leader respectively from high to low scores). In terms of factor of knowledge, "cost and time management" is the focus factor compared to innovation, facility management, design changing management and risk management in a descending order.



Table 4.1 Concluded evaluation form by interview

SKILL	1	2	3	4	5	6	7	8	9	10	Weight	Total	Percentage	
<i>The Environment and safety Practices</i>														
Energy efficiency		2	3		3	5	6	1			0.2	25.2	11.4	
Waste management					6	1	11		2		0.5	65.5	29.6	
Method of green construction		3		1	6	4	2	2	2		0.3	33.6	15.2	
Environment friendliness					2	6	6	4	1	1	0.7	97.3	43.9	
												221.6	100.0	
<i>The sustainable development Practices</i>														
Economy					3	5	6	4	1	1	0.4	55.2	24.1	
Society					2	4	3	7	2	2	0.4	59.6	26.1	
Environment								3	6	1	2	0.5	49	21.4
Understanding			5	2	2	5	3	3			0.6	64.8	28.3	
												228.6	100.0	
<i>Attitude of leader</i>														
Cognitive component		1		1	3	2	3	7	3		0.3	41.1	21.2	
Emotional component			2	4	3	2		1	2	6	0.7	94.5	48.8	
Behavior component			3	3	4	3	2	2	3		0.5	58	30.0	
												193.6	100.0	
<i>Quality of services</i>														
Location			2	3	1		2	11	1		0.3	40.2	15.3	
Quality of product							2	5	3	7	3	0.8	131.2	50.1
Technology innovation				1	2	2	5	2	6	2	0.6	90.6	34.6	
												262.0	100.0	
<b>KNOWLEDGES</b>														
	Avg.	1	2	3	4	5	6	7	8	9	10	Total	Percentage	
<i>Facility management</i>														
Building activities belong with working type			3	2	7	2	2	2	2			0.6	55.2	24.8
Physical building treat environment well					3	2	3	5	5	2		0.5	66.5	29.9
Performance of the building					7	4	4	2	2	1		0.6	66.6	30.0
Satisfaction of using this building					6	5	2	6		1		0.3	33.9	15.3
												222.2	100.0	
<i>Risk management</i>														
Understanding		1	2	1	3	2	3	4	4		0.7	89.6	53.7	
Safety more save cost					2	4	5	2	6	1		0.6	77.4	46.3
												167.0	100.0	
<i>Cost and time management</i>														
Cognitive component						1	2	10	2	5		0.4	59.2	26.1
Emotional component						1	2	8	7	2		0.5	73.5	32.5
Behavior component			1	2	1	4	5	4	3		0.7	93.8	41.4	
												226.5	100.0	
<i>Manging design changes</i>														
Reduce the impact to delivery performance			2		5	3	7	2	1		0.5	61.5	29.9	
Reduce the mistake on construction site				4	1	3	3		4	5	0.8	116.8	56.7	
Easier for communication		8	3	1	1	1	2	1	3		0.4	27.6	13.4	
												205.9	100.0	
<i>Innovation</i>														
Good ideas improve the company performance						2	4	1	9	1	3	0.4	60.8	27.3
Application can support the project				1		3	4	7	2	3	0.2	30.8	13.8	
Solve problems by the innovative tools				1	1	2	8	1	1	6	0.6	92.4	41.5	
Innovation to control and improve the performances		1	1	2	3	2	3	5	3		0.3	38.4	17.3	
												222.4	100.0	

## 4.1 Data analysis

Refer to table 3, the study analyzes in two main factors and prioritize the sub-driver in each factor (skill and knowledge) per following information.

### 4.1.1 Skills

Firstly, quality of services is the most focused driver from the skill factor. It significantly influences customers' intention and increases the level of customer satisfaction and sales. (Prakash, Phadtare, 2017) Most of the 20 interviewees gave more than 6 points to this driver, which amounts to the highest score when multiplied with the weighting factor.

“Good service provide the right solution”.

Participant 6 (CEO)

The group of interviewees, which are over 40 year old, mostly focuses on the core of engineering works. Hence, the knowledge of engineering is the solution for every problem. So, if the company lacks of quality people, they will need to train employees themselves and set up a self-learning system. Moreover, in order to provide a good service to clients, a company needs practices from the internal team.

“Mindset is another one of the important key tool for the team”.

Participant 7 (Project manager)

Employees think differently each day but a team meeting before meeting the client gives insights into the direction of the team's mindset. It can reduce the chance of a negative presentation. To maintain the level of services, the quality of services or products need to be guaranteed.

“The warrantee is the tool to prove the quality of products”.

Participant 8 (Designer)

In the construction industry, there are a lot of certifications to proof the level of service and the degree of knowledge. Some construction companies need to collect the scores and submit them to the Council of Engineers. Some others need to get their knowledge tested and get interviewed about their experiences. The quality of the projects will show to clients and marketing itself.

Secondly, the impact on economy, society and environment is focus on sustainable practice. This factor can be understood and evaluated physically. Furthermore, it is positively correlated with the performance of the company (*Sustainability attitude and performance of construction enterprises: A China study; Rui-Dong Chang;*). A construction always creates an impact on the environment and the society.

“the company need to remind ourselves that the construction always impacts everything so we need to think pros and cons as all the time”.

Participant 5 (Architect)

Construction will have less impact on the environment if started with the beginning of the design stage. So, the knowledges which architects need to have is LEEDS (Leadership in Energy and Environmental Design) which is the most widely used green building rating system in the world. However, there is also TREES, (Thai’s Rating of Energy and Environmental Sustainability) which is a newer system based on the USGBC’s LEED system, but specifically modified for Thailand. This is the standard for reducing the impact of the construction sector on the environment and the society. Some of the customer’s request all these certifications because of marketing reasons. They consider it as a win-win situation for reducing the impact on the one hand but also increasing the price of rental space on the other hand.

According to the results from the table, the least important factor of skills is the “Attitude of Leader”. This score shows almost 50% of the times an emotional component.

“Good leadership provide good power”

Participant 4 (Creative Executive)

When comparing a leader to the hub of services, it can be said that if the hub is damaged, all the devices will be damaged as well. In contrast, interviewees who have more than 3 years’ experience in the firm mentioned that

“if the employee knows their task even the leader isn’t in the right emotion it cannot be effect any quality of work and even these day, leader is not the stable emotion but in usually he or she good in control themselves. This also don’t effect to any works standard.”

Participant 7 (Designer)

Lastly, the environment and safety practice is the basis of all experts' knowledge. So, the interviewees stated that one needs to be aware of the safety first. It is the rule and regulation which employees need to follow naturally.

In conclusion, the interview shows the most important driver in skill factor is quality of service which impact directly to the customer satisfaction. Follow by sustainable practices which mostly impact to environment in all process of construction. Attitude of leader, environment and safety practice are the latest concentrations in ordering. Interviewee mostly mentioned that attitude of leader may affect to the work process only a few. Mostly every department need to know their task without ordering. Furthermore, environmental and safety is the basis of construction process, the company need to teach junior or new graduated employee to think about the environment and safety all the time.

#### **4.1.2 Knowledge**

In the field of construction every minute counts. For example, if the concrete cracks because of the 5 minutes it took the mole-frame to settle, it will impact the performance of the company and increase the costs of the project. As mentioned above, the focus factor of the knowledges part is "cost and time management". Interviewees which work in a designer position, need time to double check all of the designs before starting the construction, which takes at least 3-4 months. This amount of time can reduce defects by around 30% and the time of construction by around 30% as well.

"Even waste is the money"

Participant 6 (CEO)

This shows that a plan to meet the customer's budget is required.. During the construction process, cost problems always occur; mostly because of rushing the project. Time management may help to solve this problem in the future. It is important, that the designers need to know the timing of each work process.

"the knowledge training is important for knowing before it happening and help to correct all the detail before they design or fix the drawing for construction".

Participant 9 (Architect)

"Facilities management" and "innovation topics" became the second ranked factors. Major goals of FM in any organisation are assessing the ongoing quality of the

facility and improving the physical building and environment. (Amaratunga, Baldry, & Sarshar,2000). A company which provides great facility management will affect directly the workers performance. For example, if they need a good space environment, they mean that the whole work space must provide conveniences for their working assignments..

“some of the office building concern about the physical performance which directly impact to the behavior of the users”.

Participant 5 (Architect)

Moreover, “the creativity may come from the relaxing” said by

Participant 4 (Creative executive).

Design and construction companies should provide space for playing and relaxing and workshop space which all of the employees can use at anytime. Interviewees, which are older than 30 years felt that building performance can be influenced by the after-work-life and as mentioned above performance is the most important factor for construction companies.

Innovative topics show only 0.2 more score points than the previous topic. It deals mostly with solving problems by using innovative tools.

“In the industry people need to know the information as fast as they need”.

Participant 8 (Project manager)

If the customer updates information or has more information which the company does not have, it will directly impact the company’s performance.

“The fastest learning in the internal team will improve the quality of services.”

Participant 8 (Project manager)

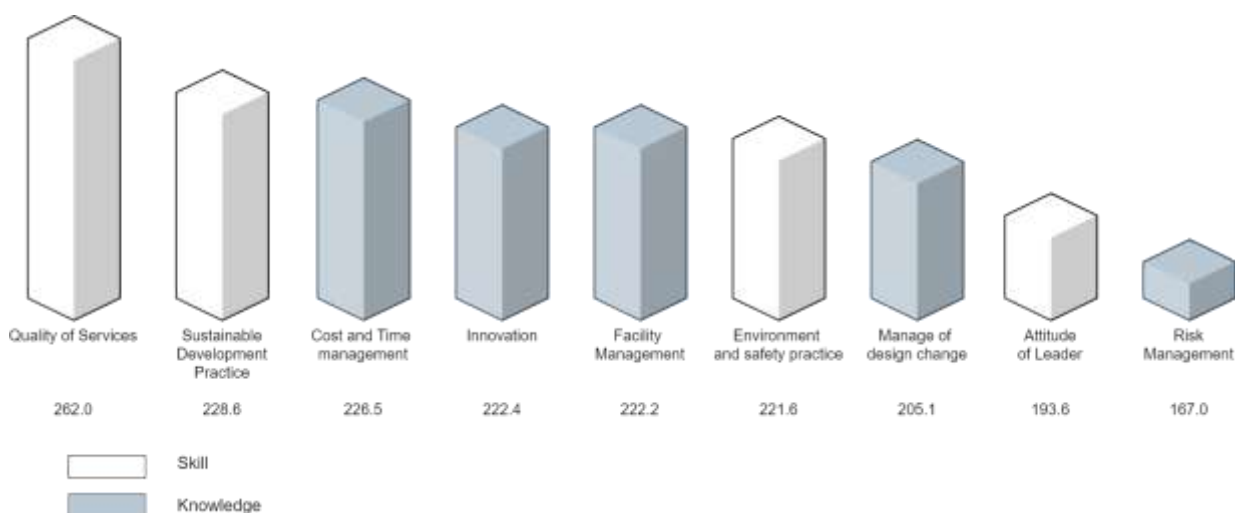
Another element is the innovation factor. An innovative idea can become a competitive advantage and therefore strongly influence the company’s performance. Being the first one who acts creatively will let one become a leader for many followers. An innovation consists of the materials for production, an innovative design, an innovative method of construction and innovative tools for the presentation.

Lastly, the risk management factor received the lowest score from interviewees. Only few interviewees mentioned this topic. Mostly, the companies manage the risks when planning the project.

“All the new engineer graduated need to remind themselves that the “safety first”. It need to keep as the core of the Engineering process”.

#### Participant 6 (CEO)

In conclusion, this research examines the factors which influence the company performance in the construction industry. The framework to do so, was created by using all the factors which were found during a literature review. The table combines the factors as two categories (skills and knowledge), which leads to the priority of each factor. See the attached figure 5 explanation below.



**Figure 4.1 Priority of the factors**

According to the figure, the main driver for improving the company’s performance is the “quality of services” from the skills category. It is followed by sustainable development practice”, “cost and time management”, “innovation”, “facility management” and “environment and safety practice”. These drivers show small differences in terms of their score, namely, 228.6-221.6 point. This means that companies should focus mainly on these drivers before focusing on the last three drivers. Large scale companies provide all skills and knowledge which are shown in figure 5. On the other side, small scale companies, provide only first six drivers. Interviewees from smaller companies mostly gave the same answers. Manage of design change, risk management and attitude of leader are the last drivers to focus. Because they are difficult to control by the management team only.

Each driver provides support details. All the details presented in Figure 6 and 7 which also shows how important in each detail as the percentage. Each factor has a main support detail which is presented as the largest percentage in pie chart. For example, the main driver of “quality of service” is the “quality of product”. For sustainable development, this research shows the main detail in order to understand the process. A good outcome for sustainable development results from the understanding of people who run the whole process.



**Figure 4.2 Percentage of detail in each drivers (skill factor)**



**Figure 4.3 Percentage of detail in each driver (knowledge factor)**

## 4.2 Additional drivers

Furthermore, some of the factors might be added to the checklist table. These factors may affect the performance as well: Task consistency, characteristics of work, cross cultural management and continuous responsibilities. The research, which was done after conducting the interviews, show the validity of these external factors. Also a foreign interviewee, who works in an international company, stated that it may be important to have cross cultural knowledge.

#### **4.2.1 Task consistency**

Construction work needs to follow the flow of processes, meaning that the responsibilities of the employees or workers in the firms should be consistent.

“Business can not wait for any delayed”

(Participant 1 : Executive Marketing Manager)

This means that even a small delay may cause other delays, which results in a domino-effect. This leads to additional costs of projects, e.g. if a project management team has planned to rent a machine for the next month but a delay in terms of the design process causes postponing the process, the company has to pay for the machine anyway.

#### **4.2.2 Characteristics of work**

Being honest with customers is very important in the construction industry because the whole process has to pass many departments and some of these departments may charge service fees which results in additional costs and a reduced performance of the company. In Thailand the performance of each construction company may be difficult to present because some of the customers may not tell which company has built a specific construction. However, customers may have a bigger influence regarding promoting a company by spreading word-of-mouth than regular marketing activities have. Many construction firms have less experience so they offer quotations with remarks. In any case, if additional costs arise after the construction work has already been started, it will confuse the customer which results in reduced trust in the company’s performance and some of the customer may believe that the company is corrupt.

Said by (Participant 1 -Executive Marketing Manager)

#### **4.2.3 Cross cultural management**

Companies, which are located in Thailand but have their headquarter situated in another country, may have problems with foreign employees. A big problem hereby is miscommunication, which impacts the understanding of the work’s requirements. This may also occur if all employees are even Thai, but the leader is from another country. “The results may not right as the project’s purpose” said by Architect. The other way around, meaning that the leader is Thai but the employees have an international background leads to a high need of training for the employees regarding



Thai regulations, construction techniques and safety standards. “This may cost as the Time used” said Senior civil engineer. This may lead to problems in terms of service qualities as well.

#### **4.2.4 Continuous responsibilities**

“Plan the project forward to the future and share the workload into every period without any faded” Project Manager. From this quote one can see that the construction business is divided into many single process steps.

## **CHAPTER V**

### **CONCLUSION AND RECOMMENDATION**

This study has investigated how construction agents think about and prioritize the commonalities which influence the company's performance for customers. The study has identified that company performance is a powerful measure in order to make customers stick to a particular agent. This view is supported by Claycomb, Martin (2002) and West, Ford, & Ibrahim (2010) who said that eighty percent of a firm's new business comes from the top twenty percent of its clients. Agents try to satisfy customers and build trust from a pre-relationship stage on. This is done by managing the quality of services and the construction management practices in terms of cost and time management, facilities management, sustainability practices, innovation, environment and safety practices, management of design change, attitude of leader and risk management.

During the consumption stage agents can reach to customers in order to implement construction practices which provide seamless services and professional advices. In the expansion stage, agents start to manage the project according to the process of each type of project in order to understand the customer's purpose and plan the construction methodology, the cost and time utilization, calculate the material use for purchasing or ordering, plan the schedule and share responsibilities with other related departments, calculate the measurable practices for, for example, sustainable practices or environmental practices. The hereby gathered information will be shared with the customer during a meeting.

Aside from the four skills and five knowledges, from the literature review, which support the performance of construction companies, the research also found that additional factors such as task consistency, characteristics of work, cross cultural management, and continuous responsibilities also contribute to the company's performance. This is valid for all companies in the construction industry. In my opinion,

these additional commonalities are significant to support the performance of the company.

### **Theoretical implication**

The study of Th Yusof (2012) shows that the success of a company directly depends on the growth of the company which is supported by knowledge management. Knowledge management includes construction management, facilities management Chournazidis (2013), cost and time management Amusan (2018), managing design change Boon Hui Yap (2017), risk management Fortaza (2017) & Renault (2016) and innovation Caigbavboa (2017). These commonalities differ in terms of importance but in order to evaluate a weighting factor for each category, industry experts are needed (see chapter IV). The results show that all these commonalities are necessary in order to improve the company's performance. Although all interviewees agreed on this, the scale of the company may lead to different results. For example, small companies may only be concerned about basic factors and will focus on other factors later on. In contrast, large companies are rather concerned about the factors, which are the most important for the customers and therefore they may select other factors as basic factors for the company. By large company, a company with more than 500 employees is meant.

From the skills category the "quality of services" is the most important element as it contributes strongly to the company's performance. (Anand Prakash & Milind Phadtare, 2017). In fact, the quality of services is the main factor for operating business followed by "sustainability practices" (Rui-Dong, 2017), "facilities management" (Amaratunga, Baldry & Sarshar, 2000), "environment and safety practices" (Yusof, Abidin & Iranmanesh, 2016), and "attitude of leader" (Arthur-Aidoo, 2016)

### **Practical implication**

According to the study of "Skill and knowledge management practice to enhanced company performance: Thai construction industry", top level managers or CEOs can use the evaluation template from this paper in order to apply it in their organization to analyze the company and improve its performance. As shown in table 3, the table needs weighting factors, which are defined by industry experts of each

company. In this way, a total score of each element of the categories can be calculated. The results can provide a direction for future planning as they show which factor has to be improved and which factor is not important. The table shows also sub-factors which help with the implementation of the main factors. This evaluation form can be adapted to every company scale and every department in the construction industry.



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## **APPENDICES**

## **APPENDIX A**

### **INTRVIEW QUESTIONS**

#### **Question for experts**

- Personal background / Experiences / Scale of company / Years of work
- Explanation about work position
- What is the performance in their opinion?
- What is the performance mean in their company?
- How does company measure performance?
- How can they know the rank of performance compare to other company in Thailand industry?
- Which problem is effect directly to reduce the company performance?
- Which factor company concern the most, for reflect company performance to the public?
- Any trends or global changing effect to the process of maintain the company performance.
- Which is more important between knowledge and skill?
- What is the skill/ knowledge in their understanding? And how to get those?
- If they ever change the position of company, how is the difference company focusing on each performance? And why?
- Any surrounding, environmental or society are in concern?
- Is leader perspective impact to the company performance? When? And how?